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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,449	03/19/2004	Ming-Jie Huang	67,200-1205	7283

7590 10/14/2005

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EXAMINER	
GOUDREAU, GEORGE A	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 10/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/804,449	HUANG ET AL.	
	Examiner	Art Unit	
	George A. Goudreau	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5-9,11-16 and 19-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-9,11-16,19,20 and 25-27* is/are rejected.

7)☒ Claim(s) *21-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER
10-05

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5-9, 11-13, and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Tao et. al. (6,399,515).

Tao et. al. disclose a process for anisotropically rie etching a blanket polysi layer (36) on the surface of a cz-Si wafer (30) using a patterned hard mask layer (38), and a patterned photo resist layer (40) as an etch mask. A gate oxide layer (34) is formed between the blanket silicon layer (36) and the cz-Si wafer. The blanket silicon layer may be doped or undoped. Further, the blanket silicon layer may be alternatively comprised of any of cz-Si or amorphous-Si. The hard mask layer may be comprised of any of Si3N4, SiO2, and SiON. The etching process is conducted in two steps. In the first etching step, the polysi layer is etched with a fluorine based etchant using the patterned photo resist layer/ hard mask layer as an etch mask. The fluorine-based etchant may be comprised of any of SF6, CF4, and C2F6. The photo resist etch mask is then stripped from the surface of the wafer. In the second etching step, the polysi is etched using a gas comprised of a halogen other than fluorine, and the patterned hard mask as an etch mask. The halogen-based gas, which is used in the second etching step, may be comprised of any of HCl, Cl2, Br2, and HBr. In one specific example the

first etchant is comprised of (CF4 or SF6)-O2-He, and the second etchant is comprised of Cl2-HBr-O2-He. This is discussed specifically in columns 3-10; and discussed in general in columns 1-14. This is shown in figures 1-8.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3, 14-16, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 3 above.

The reference as applied in paragraph 3 above fail to disclose the following aspects of applicant's claimed process:

-the specific usage of an organic BARC anti-reflection film between the hard mask layer, and the photo-resist mask layer; and

-the specific etch process parameters which are claimed by the applicant

It would have been obvious to one skilled in the art to employ an organic BARC antireflection film between the hard mask layer, and the photo resist layer in the etching process which is taught above based upon the following. The usage of an organic BARC antireflection film between a photo resist layer, and a hard mask layer in an etching process is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, this would have simply involved the usage of an alternative, and at least equivalent means for providing an etching mask in the etching process, which is taught above to the specific means, which are taught above.

It would have been prima facie obvious to employ any of a variety of different etch process parameters in the etching process taught above including those which are specifically claimed by the applicant. These are all well-known variables in the plasma etching art, which are known to effect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etching process parameters which are claimed by the applicant in the etching process which is taught above based upon In re Aller as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.≅ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters, which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the quality of the plasma etching process.

7. Claims 21-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication should be directed to examiner George A. Goudreau at telephone number (571)-272-1434.

George A. Goudreau
Primary Examiner
Art Unit 1763